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T.O.T.O.B.O " E.E.O.O.2.6.6.O

# SEQUENCE LISTING

<110> Rosanne M. Crooke  
Mark J. Graham

<120> ANTISENSE MODULATION OF APOLIPOPROTEIN B EXPRESSION

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<211> 14121

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

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Met Asp Pro Pro Arg Pro Ala Leu Leu Ala Leu Leu Ala Leu  
1 5 10

cct gcg ctg ctg ctg ctg ctg ctg gcg ggc gcc agg gcc gaa gag gaa 218  
Pro Ala Leu Leu Leu Leu Leu Ala Gly Ala Arg Ala Glu Glu Glu  
15 20 25 30

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Lys His Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu Ser Ser Ser	
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Gly Val Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys	
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Ser Gln Cys Thr Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys	
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ctg Leu	ctg Leu	gac Asp	att Ile	gct Ala	aat Asn	tac Tyr	ctg Leu	atg Met	gaa Glu	cag Gln	att Ile	caa Gln	gat Asp	gac Asp	tgc Cys	1562
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Ala Leu Phe Gly	Lys Gln Gly Phe	Phe Phe Pro Asp	Ser Val Asn Lys									
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Ser Lys Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile Leu Gly Glu	
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Ala Lys Phe Ser Leu Asp Gly Lys Ala Ala Leu Thr Glu Leu Ser Leu	
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Ile Ala Gly Leu Ser Leu Asp Phe Ser Ser Lys Leu Asp Asn Ile Tyr	
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Tyr Ser Leu Val Thr Thr Leu Asn Ser Asp Leu Lys Tyr Asn Ala Leu	
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Val Ala Gly Asn Leu Lys Gly Ala Tyr Gln Asn Asn Glu Ile Lys His	
1825 1830 1835	
atc tat gcc atc tct tct gct gcc tta tca gca agc tat aaa gca gac	5690
Ile Tyr Ala Ile Ser Ser Ala Ala Leu Ser Ala Ser Tyr Lys Ala Asp	
1840 1845 1850	

act gtt gct aag gtt cag ggt gtg gag ttt agc cat cgg ctc aac aca	5738
Thr Val Ala Lys Val Gln Gly Val Glu Phe Ser His Arg Leu Asn Thr	
1855 1860 1865 1870	
gac atc gct ggg ctg gct tca gcc att gac atg agc aca aac tat aat	5786
Asp Ile Ala Gly Leu Ala Ser Ala Ile Asp Met Ser Thr Asn Tyr Asn	
1875 1880 1885	
tca gac tca ctg cat ttc agc aat gtc ttc cgt tct gta atg gcc ccg	5834
Ser Asp Ser Leu His Phe Ser Asn Val Phe Arg Ser Val Met Ala Pro	
1890 1895 1900	
ttt acc atg acc atc gat gca cat aca aat ggc aat ggg aaa ctc gct	5882
Phe Thr Met Thr Ile Asp Ala His Thr Asn Gly Asn Gly Lys Leu Ala	
1905 1910 1915	
ctc tgg gga gaa cat act ggg cag ctg tat agc aaa ttc ctg ttg aaa	5930
Leu Trp Gly Glu His Thr Gly Gln Leu Tyr Ser Lys Phe Leu Leu Lys	
1920 1925 1930	
gca gaa cct ctg gca ttt act ttc tct cat gat tac aaa ggc tcc aca	5978
Ala Glu Pro Leu Ala Phe Thr Phe Ser His Asp Tyr Lys Gly Ser Thr	
1935 1940 1945 1950	
agt cat cat ctc gtg tct agg aaa agc atc agt gca gct ctt gaa cac	6026
Ser His His Leu Val Ser Arg Lys Ser Ile Ser Ala Ala Leu Glu His	
1955 1960 1965	
aaa gtc agt gcc ctg ctt act cca gct gag cag aca ggc acc tgg aaa	6074
Lys Val Ser Ala Leu Leu Thr Pro Ala Glu Gln Thr Gly Thr Trp Lys	
1970 1975 1980	
ctc aag acc caa ttt aac aac aat gaa tac agc cag gac ttg gat gct	6122
Leu Lys Thr Gln Phe Asn Asn Asn Glu Tyr Ser Gln Asp Leu Asp Ala	
1985 1990 1995	
tac aac act aaa gat aaa att ggc gtg gag ctt act gga cga act ctg	6170
Tyr Asn Thr Lys Asp Lys Ile Gly Val Glu Leu Thr Gly Arg Thr Leu	
2000 2005 2010	
gct gac cta act cta cta gac tcc cca att aaa gtg cca ctt tta ctc	6218
Ala Asp Leu Thr Leu Leu Asp Ser Pro Ile Lys Val Pro Leu Leu Leu	
2015 2020 2025 2030	
agt gag ccc atc aat atc att gat gct tta gag atg aga gat gcc gtt	6266
Ser Glu Pro Ile Asn Ile Ile Asp Ala Leu Glu Met Arg Asp Ala Val	
2035 2040 2045	
gag aag ccc caa gaa ttt aca att gtt gct ttt gta aag tat gat aaa	6314
Glu Lys Pro Gln Glu Phe Thr Ile Val Ala Phe Val Lys Tyr Asp Lys	
2050 2055 2060	
aac caa gat gtt cac tcc att aac ctc cca ttt ttt gag acc ttg caa	6362
Asn Gln Asp Val His Ser Ile Asn Leu Pro Phe Phe Glu Thr Leu Gln	
2065 2070 2075	
gaa tat ttt gag agg aat cga caa acc att ata gtt gta gtg gaa aac	6410

Glu Tyr Phe Glu Arg Asn Arg Gln Thr Ile Ile Val Val Val Glu Asn	
2080 2085 2090	
gta cag aga aac ctg aag cac atc aat att gat caa ttt gta aga aaa	6458
Val Gln Arg Asn Leu Lys His Ile Asn Ile Asp Gln Phe Val Arg Lys	
2095 2100 2105 2110	
tac aga gca gcc ctg gga aaa ctc cca cag caa gct aat gat tat ctg	6506
Tyr Arg Ala Ala Leu Gly Lys Leu Pro Gln Gln Ala Asn Asp Tyr Leu	
2115 2120 2125	
aat tca ttc aat tgg gag aga caa gtt tca cat gcc aag gag aaa ctg	6554
Asn Ser Phe Asn Trp Glu Arg Gln Val Ser His Ala Lys Glu Lys Leu	
2130 2135 2140	
act gct ctc aca aaa aag tat aga att aca gaa aat gat ata caa att	6602
Thr Ala Leu Thr Lys Lys Tyr Arg Ile Thr Glu Asn Asp Ile Gln Ile	
2145 2150 2155	
gca tta gat gat gcc aaa atc aac ttt aat gaa aaa cta tct caa ctg	6650
Ala Leu Asp Asp Ala Lys Ile Asn Phe Asn Glu Lys Leu Ser Gln Leu	
2160 2165 2170	
cag aca tat atg ata caa ttt gat cag tat att aaa gat agt tat gat	6698
Gln Thr Tyr Met Ile Gln Phe Asp Gln Tyr Ile Lys Asp Ser Tyr Asp	
2175 2180 2185 2190	
tta cat gat ttg aaa ata gct att gct aat att att gat gaa atc att	6746
Leu His Asp Leu Lys Ile Ala Ile Ala Asn Ile Ile Asp Glu Ile Ile	
2195 2200 2205	
gaa aaa tta aaa agt ctt gat gag cac tat cat atc cgt gta aat tta	6794
Glu Lys Leu Lys Ser Leu Asp Glu His Tyr His Ile Arg Val Asn Leu	
2210 2215 2220	
gta aaa aca atc cat gat cta cat ttg ttt att gaa aat att gat ttt	6842
Val Lys Thr Ile His Asp Leu His Leu Phe Ile Glu Asn Ile Asp Phe	
2225 2230 2235	
aac aaa agt gga agt agt act gca tcc tgg att caa aat gtg gat act	6890
Asn Lys Ser Gly Ser Ser Thr Ala Ser Trp Ile Gln Asn Val Asp Thr	
2240 2245 2250	
aag tac caa atc aga atc cag ata caa gaa aaa ctg cag cag ctt aag	6938
Lys Tyr Gln Ile Arg Ile Gln Ile Gln Glu Lys Leu Gln Gln Leu Lys	
2255 2260 2265 2270	
aga cac ata cag aat ata gac atc cag cac cta gct gga aag tta aaa	6986
Arg His Ile Gln Asn Ile Asp Ile Gln His Leu Ala Gly Lys Leu Lys	
2275 2280 2285	
caa cac att gag gct att gat gtt aga gtg ctt tta gat caa ttg gga	7034
Gln His Ile Glu Ala Ile Asp Val Arg Val Leu Leu Asp Gln Leu Gly	
2290 2295 2300	
act aca att tca ttt gaa aga ata aat gat gtt ctt gag cat gtc aaa	7082
Thr Thr Ile Ser Phe Glu Arg Ile Asn Asp Val Leu Glu His Val Lys	

2305	2310	2315	
cac ttt gtt ata aat ctt att ggg gat ttt gaa gta gct gag aaa atc His Phe Val Ile Asn Leu Ile Gly Asp Phe Glu Val Ala Glu Lys Ile 2320 2325 2330			7130
aat gcc ttc aga gcc aaa gtc cat gag tta atc gag agg tat gaa gta Asn Ala Phe Arg Ala Lys Val His Glu Leu Ile Glu Arg Tyr Glu Val 2335 2340 2345 2350			7178
gac caa caa atc cag gtt tta atg gat aaa tta gta gag ttg acc cac Asp Gln Gln Ile Gln Val Leu Met Asp Lys Leu Val Glu Leu Thr His 2355 2360 2365			7226
caa tac aag ttg aag gag act att cag aag cta agc aat gtc cta caa Gln Tyr Lys Leu Lys Glu Thr Ile Gln Lys Leu Ser Asn Val Leu Gln 2370 2375 2380			7274
caa gtt aag ata aaa gat tac ttt gag aaa ttg gtt gga ttt att gat Gln Val Lys Ile Lys Asp Tyr Phe Glu Lys Leu Val Gly Phe Ile Asp 2385 2390 2395			7322
gat gct gtg aag aag ctt aat gaa tta tct ttt aaa aca ttc att gaa Asp Ala Val Lys Lys Leu Asn Glu Leu Ser Phe Lys Thr Phe Ile Glu 2400 2405 2410			7370
gat gtt aac aaa ttc ctt gac atg ttg ata aag aaa tta aag tca ttt Asp Val Asn Lys Phe Leu Asp Met Leu Ile Lys Lys Leu Lys Ser Phe 2415 2420 2425 2430			7418
gat tac cac cag ttt gta gat gaa acc aat gac aaa atc cgt gag gtg Asp Tyr His Gln Phe Val Asp Glu Thr Asn Asp Lys Ile Arg Glu Val 2435 2440 2445			7466
act cag aga ctc aat ggt gaa att cag gct ctg gaa cta cca caa aaa Thr Gln Arg Leu Asn Gly Glu Ile Gln Ala Leu Glu Leu Pro Gln Lys 2450 2455 2460			7514
gct gaa gca tta aaa ctg ttt tta gag gaa acc aag gcc aca gtt gca Ala Glu Ala Leu Lys Leu Phe Leu Glu Glu Thr Lys Ala Thr Val Ala 2465 2470 2475			7562
gtg tat ctg gaa agc cta cag gac acc aaa ata acc tta atc atc aat Val Tyr Leu Glu Ser Leu Gln Asp Thr Lys Ile Thr Leu Ile Ile Asn 2480 2485 2490			7610
tgg tta cag gag gct tta agt tca gca tct ttg gct cac atg aag gcc Trp Leu Gln Glu Ala Leu Ser Ser Ala Ser Leu Ala His Met Lys Ala 2495 2500 2505 2510			7658
aaa ttc cga gag act cta gaa gat aca cga gac cga atg tat caa atg Lys Phe Arg Glu Thr Leu Glu Asp Thr Arg Asp Arg Met Tyr Gln Met 2515 2520 2525			7706
gac att cag cag gaa ctt caa cga tac ctg tct ctg gta ggc cag gtt Asp Ile Gln Gln Glu Leu Gln Arg Tyr Leu Ser Leu Val Gly Gln Val 2530 2535 2540			7754

tat agc aca ctt gtc acc tac att tct gat tgg tgg act ctt gct gct	7802
Tyr Ser Thr Leu Val Thr Tyr Ile Ser Asp Trp Trp Thr Leu Ala Ala	
2545 2550 2555	
aag aac ctt act gac ttt gca gag caa tat tct atc caa gat tgg gct	7850
Lys Asn Leu Thr Asp Phe Ala Glu Gln Tyr Ser Ile Gln Asp Trp Ala	
2560 2565 2570	
aaa cgt atg aaa gca ttg gta gag caa ggg ttc act gtt cct gaa atc	7898
Lys Arg Met Lys Ala Leu Val Glu Gln Gly Phe Thr Val Pro Glu Ile	
2575 2580 2585 2590	
aag acc atc ctt ggg acc atg cct gcc ttt gaa gtc agt ctt cag gct	7946
Lys Thr Ile Leu Gly Thr Met Pro Ala Phe Glu Val Ser Leu Gln Ala	
2595 2600 2605	
ctt cag aaa gct acc ttc cag aca cct gat ttt ata gtc ccc cta aca	7994
Leu Gln Lys Ala Thr Phe Gln Thr Pro Asp Phe Ile Val Pro Leu Thr	
2610 2615 2620	
gat ttg agg att cca tca gtt cag ata aac ttc aaa gac tta aaa aat	8042
Asp Leu Arg Ile Pro Ser Val Gln Ile Asn Phe Lys Asp Leu Lys Asn	
2625 2630 2635	
ata aaa atc cca tcc agg ttt tcc aca cca gaa ttt acc atc ctt aac	8090
Ile Lys Ile Pro Ser Arg Phe Ser Thr Pro Glu Phe Thr Ile Leu Asn	
2640 2645 2650	
acc ttc cac att cct tcc ttt aca att gac ttt gtc gaa atg aaa gta	8138
Thr Phe His Ile Pro Ser Phe Thr Ile Asp Phe Val Glu Met Lys Val	
2655 2660 2665 2670	
aag atc atc aga acc att gac cag atg cag aac agt gag ctg cag tgg	8186
Lys Ile Ile Arg Thr Ile Asp Gln Met Gln Asn Ser Glu Leu Gln Trp	
2675 2680 2685	
ccc gtt cca gat ata tat ctc agg gat ctg aag gtg gag gac att cct	8234
Pro Val Pro Asp Ile Tyr Leu Arg Asp Leu Lys Val Glu Asp Ile Pro	
2690 2695 2700	
cta gcg aga atc acc ctg cca gac ttc cgt tta cca gaa atc gca att	8282
Leu Ala Arg Ile Thr Leu Pro Asp Phe Arg Leu Pro Glu Ile Ala Ile	
2705 2710 2715	
cca gaa ttc ata atc cca act ctc aac ctt aat gat ttt caa gtt cct	8330
Pro Glu Phe Ile Ile Pro Thr Leu Asn Leu Asn Asp Phe Gln Val Pro	
2720 2725 2730	
gac ctt cac ata cca gaa ttc cag ctt ccc cac atc tca cac aca att	8378
Asp Leu His Ile Pro Glu Phe Gln Leu Pro His Ile Ser His Thr Ile	
2735 2740 2745 2750	
gaa gta cct act ttt ggc aag cta tac agt att ctg aaa atc caa tct	8426
Glu Val Pro Thr Phe Gly Lys Leu Tyr Ser Ile Leu Lys Ile Gln Ser	
2755 2760 2765	

cct ctt ttc aca tta gat gca aat gct gac ata ggg aat gga acc acc	8474
Pro Leu Phe Thr Leu Asp Ala Asn Ala Asp Ile Gly Asn Gly Thr Thr	
2770 2775 2780	
tca gca aac gaa gca ggt atc gca gct tcc atc act gcc aaa gga gag	8522
Ser Ala Asn Glu Ala Gly Ile Ala Ala Ser Ile Thr Ala Lys Gly Glu	
2785 2790 2795	
tcc aaa tta gaa gtt ctc aat ttt gat ttt caa gca aat gca caa ctc	8570
Ser Lys Leu Glu Val Leu Asn Phe Asp Phe Gln Ala Asn Ala Gln Leu	
2800 2805 2810	
tca aac cct aag att aat ccg ctg gct ctg aag gag tca gtg aag ttc	8618
Ser Asn Pro Lys Ile Asn Pro Leu Ala Leu Lys Glu Ser Val Lys Phe	
2815 2820 2825 2830	
tcc agc aag tac ctg aga acg gag cat ggg agt gaa atg ctg ttt ttt	8666
Ser Ser Lys Tyr Leu Arg Thr Glu His Gly Ser Glu Met Leu Phe Phe	
2835 2840 2845	
gga aat gct att gag gga aaa tca aac aca gtg gca agt tta cac aca	8714
Gly Asn Ala Ile Glu Gly Lys Ser Asn Thr Val Ala Ser Leu His Thr	
2850 2855 2860	
gaa aaa aat aca ctg gag ctt agt aat gga gtg att gtc aag ata aac	8762
Glu Lys Asn Thr Leu Glu Leu Ser Asn Gly Val Ile Val Lys Ile Asn	
2865 2870 2875	
aat cag ctt acc ctg gat agc aac act aaa tac ttc cac aaa ttg aac	8810
Asn Gln Leu Thr Leu Asp Ser Asn Thr Lys Tyr Phe His Lys Leu Asn	
2880 2885 2890	
atc ccc aaa ctg gac ttc tct agt cag gct gac ctg cgc aac gag atc	8858
Ile Pro Lys Leu Asp Phe Ser Ser Gln Ala Asp Leu Arg Asn Glu Ile	
2895 2900 2905 2910	
aag aca ctg ttg aaa gct ggc cac ata gca tgg act tct tct gga aaa	8906
Lys Thr Leu Leu Lys Ala Gly His Ile Ala Trp Thr Ser Ser Gly Lys	
2915 2920 2925	
ggg tca tgg aaa tgg gcc tgc ccc aga ttc tca gat gag gga aca cat	8954
Gly Ser Trp Lys Trp Ala Cys Pro Arg Phe Ser Asp Glu Gly Thr His	
2930 2935 2940	
gaa tca caa att agt ttc acc ata gaa gga ccc ctc act tcc ttt gga	9002
Glu Ser Gln Ile Ser Phe Thr Ile Glu Gly Pro Leu Thr Ser Phe Gly	
2945 2950 2955	
ctg tcc aat aag atc aat agc aaa cac cta aga gta aac caa aac ttg	9050
Leu Ser Asn Lys Ile Asn Ser Lys His Leu Arg Val Asn Gln Asn Leu	
2960 2965 2970	
gtt tat gaa tct ggc tcc ctc aac ttt tct aaa ctt gaa att caa tca	9098
Val Tyr Glu Ser Gly Ser Leu Asn Phe Ser Lys Leu Glu Ile Gln Ser	
2975 2980 2985 2990	
caa gtc gat tcc cag cat gtg ggc cac agt gtt cta act gct aaa ggc	9146

Gln Val Asp Ser	Gln His Val Gly His	Ser Val Leu Thr	Ala Lys Gly	
	2995	3000	3005	
atg gca ctg ttt gga gaa ggg aag gca gag ttt act ggg agg cat gat	9194			
Met Ala Leu Phe Gly Glu Gly Lys Ala Glu Phe Thr Gly Arg His Asp				
	3010	3015	3020	
gct cat tta aat gga aag gtt att gga act ttg aaa aat tct ctt ttc	9242			
Ala His Leu Asn Gly Lys Val Ile Gly Thr Leu Lys Asn Ser Leu Phe				
	3025	3030	3035	
ttt tca gcc cag cca ttt gag atc acg gca tcc aca aac aat gaa ggg	9290			
Phe Ser Ala Gln Pro Phe Glu Ile Thr Ala Ser Thr Asn Asn Glu Gly				
	3040	3045	3050	
aat ttg aaa gtt cgt ttt cca tta agg tta aca ggg aag ata gac ttc	9338			
Asn Leu Lys Val Arg Phe Pro Leu Arg Leu Thr Gly Lys Ile Asp Phe				
	3055	3060	3065	3070
ctg aat aac tat gca ctg ttt ctg agt ccc agt gcc cag caa gca agt	9386			
Leu Asn Asn Tyr Ala Leu Phe Leu Ser Pro Ser Ala Gln Gln Ala Ser				
	3075	3080	3085	
tgg caa gta agt gct agg ttc aat cag tat aag tac aac caa aat ttc	9434			
Trp Gln Val Ser Ala Arg Phe Asn Gln Tyr Lys Tyr Asn Gln Asn Phe				
	3090	3095	3100	
tct gct gga aac aac gag aac att atg gag gcc cat gta gga ata aat	9482			
Ser Ala Gly Asn Asn Glu Asn Ile Met Glu Ala His Val Gly Ile Asn				
	3105	3110	3115	
gga gaa gca aat ctg gat ttc tta aac att cct tta aca att cct gaa	9530			
Gly Glu Ala Asn Leu Asp Phe Leu Asn Ile Pro Leu Thr Ile Pro Glu				
	3120	3125	3130	
atg cgt cta cct tac aca ata atc aca act cct cca ctg aaa gat ttc	9578			
Met Arg Leu Pro Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys Asp Phe				
	3135	3140	3145	3150
tct cta tgg gaa aaa aca ggc ttg aag gaa ttc ttg aaa acg aca aag	9626			
Ser Leu Trp Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys Thr Thr Lys				
	3155	3160	3165	
caa tca ttt gat tta agt gta aaa gct cag tat aag aaa aac aaa cac	9674			
Gln Ser Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys Lys Asn Lys His				
	3170	3175	3180	
agg cat tcc atc aca aat cct ttg gct gtg ctt tgt gag ttt atc agt	9722			
Arg His Ser Ile Thr Asn Pro Leu Ala Val Leu Cys Glu Phe Ile Ser				
	3185	3190	3195	
cag agc atc aaa tcc ttt gac agg cat ttt gaa aaa aac aga aac aat	9770			
Gln Ser Ile Lys Ser Phe Asp Arg His Phe Glu Lys Asn Arg Asn Asn				
	3200	3205	3210	
gca tta gat ttt gtc acc aaa tcc tat aat gaa aca aaa att aag ttt	9818			
Ala Leu Asp Phe Val Thr Lys Ser Tyr Asn Glu Thr Lys Ile Lys Phe				

3215	3220	3225	3230	
gat aag tac aaa gct gaa aaa tct cac gac gag ctc ccc agg acc ttt				9866
Asp Lys Tyr Lys Ala Glu Lys Ser His Asp Glu Leu Pro Arg Thr Phe				
3235		3240	3245	
caa att cct gga tac act gtt cca gtt gtc aat gtt gaa gtg tct cca				9914
Gln Ile Pro Gly Tyr Thr Val Pro Val Val Asn Val Glu Val Ser Pro				
3250		3255	3260	
ttc acc ata gag atg tcg gca ttc ggc tat gtg ttc cca aaa gca gtc				9962
Phe Thr Ile Glu Met Ser Ala Phe Gly Tyr Val Phe Pro Lys Ala Val				
3265		3270	3275	
agc atg cct agt ttc tcc atc cta ggt tct gac gtc cgt gtg cct tca				10010
Ser Met Pro Ser Phe Ser Ile Leu Gly Ser Asp Val Arg Val Pro Ser				
3280		3285	3290	
tac aca tta atc ctg cca tca tta gag ctg cca gtc ctt cat gtc cct				10058
Tyr Thr Leu Ile Leu Pro Ser Leu Glu Leu Pro Val Leu His Val Pro				
3295		3300	3305	3310
aga aat ctc aag ctt tct ctt cca cat ttc aag gaa ttg tgt acc ata				10106
Arg Asn Leu Lys Leu Ser Leu Pro His Phe Lys Glu Leu Cys Thr Ile				
3315		3320	3325	
agc cat att ttt att cct gcc atg ggc aat att acc tat gat ttc tcc				10154
Ser His Ile Phe Ile Pro Ala Met Gly Asn Ile Thr Tyr Asp Phe Ser				
3330		3335	3340	
ttt aaa tca agt gtc atc aca ctg aat acc aat gct gaa ctt ttt aac				10202
Phe Lys Ser Ser Val Ile Thr Leu Asn Thr Asn Ala Glu Leu Phe Asn				
3345		3350	3355	
cag tca gat att gtt gct cat ctc ctt tct tca tct tca tct gtc att				10250
Gln Ser Asp Ile Val Ala His Leu Leu Ser Ser Ser Ser Ser Val Ile				
3360		3365	3370	
gat gca ctg cag tac aaa tta gag ggc acc aca aga ttg aca aga aaa				10298
Asp Ala Leu Gln Tyr Lys Leu Glu Gly Thr Thr Arg Leu Thr Arg Lys				
3375		3380	3385	3390
agg gga ttg aag tta gcc aca gct ctg tct ctg agc aac aaa ttt gtg				10346
Arg Gly Leu Lys Leu Ala Thr Ala Leu Ser Leu Ser Asn Lys Phe Val				
3395		3400	3405	
gag ggt agt cat aac agt act gtg agc tta acc acg aaa aat atg gaa				10394
Glu Gly Ser His Asn Ser Thr Val Ser Leu Thr Thr Lys Asn Met Glu				
3410		3415	3420	
gtg tca gtg gca aaa acc aca aaa gcc gaa att cca att ttg aga atg				10442
Val Ser Val Ala Lys Thr Thr Lys Ala Glu Ile Pro Ile Leu Arg Met				
3425		3430	3435	
aat ttc aag caa gaa ctt aat gga aat acc aag tca aaa cct act gtc				10490
Asn Phe Lys Gln Glu Leu Asn Gly Asn Thr Lys Ser Lys Pro Thr Val				
3440		3445	3450	



tct tcc tcc atg gaa ttt aag tat gat ttc aat tct tca atg ctg tac	10538
Ser Ser Ser Met Glu Phe Lys Tyr Asp Phe Asn Ser Ser Met Leu Tyr	
3455 3460 3465 3470	
tct acc gct aaa gga gca gtt gac cac aag ctt agc ttg gaa agc ctc	10586
Ser Thr Ala Lys Gly Ala Val Asp His Lys Leu Ser Leu Glu Ser Leu	
3475 3480 3485	
acc tct tac ttt tcc att gag tca tct acc aaa gga gat gtc aag ggt	10634
Thr Ser Tyr Phe Ser Ile Glu Ser Thr Lys Gly Asp Val Lys Gly	
3490 3495 3500	
tcg gtt ctt tct cgg gaa tat tca gga act att gct agt gag gcc aac	10682
Ser Val Leu Ser Arg Glu Tyr Ser Gly Thr Ile Ala Ser Glu Ala Asn	
3505 3510 3515	
act tac ttg aat tcc aag agc aca cgg tct tca gtg aag ctg cag ggc	10730
Thr Tyr Leu Asn Ser Lys Ser Thr Arg Ser Ser Val Lys Leu Gln Gly	
3520 3525 3530	
act tcc aaa att gat gat atc tgg aac ctt gaa gta aaa gaa aat ttt	10778
Thr Ser Lys Ile Asp Asp Ile Trp Asn Leu Glu Val Lys Glu Asn Phe	
3535 3540 3545 3550	
gct gga gaa gcc aca ctc caa cgc ata tat tcc ctc tgg gag cac agt	10826
Ala Gly Glu Ala Thr Leu Gln Arg Ile Tyr Ser Leu Trp Glu His Ser	
3555 3560 3565	
acg aaa aac cac tta cag cta gag ggc ctc ttt ttc acc aac gga gaa	10874
Thr Lys Asn His Leu Gln Leu Glu Gly Leu Phe Phe Thr Asn Gly Glu	
3570 3575 3580	
cat aca agc aaa gcc acc ctg gaa ctc tct cca tgg caa atg tca gct	10922
His Thr Ser Lys Ala Thr Leu Glu Leu Ser Pro Trp Gln Met Ser Ala	
3585 3590 3595	
ctt gtt cag gtc cat gca agt cag ccc agt tcc ttc cat gat ttc cct	10970
Leu Val Gln Val His Ala Ser Gln Pro Ser Ser Phe His Asp Phe Pro	
3600 3605 3610	
gac ctt ggc cag gaa gtg gcc ctg aat gct aac act aag aac cag aag	11018
Asp Leu Gly Gln Glu Val Ala Leu Asn Ala Asn Thr Lys Asn Gln Lys	
3615 3620 3625 3630	
atc aga tgg aaa aat gaa gtc cgg att cat tct ggg tct ttc cag agc	11066
Ile Arg Trp Lys Asn Glu Val Arg Ile His Ser Gly Ser Phe Gln Ser	
3635 3640 3645	
cag gtc gag ctt tcc aat gac caa gaa aag gca cac ctt gac att gca	11114
Gln Val Glu Leu Ser Asn Asp Gln Glu Lys Ala His Leu Asp Ile Ala	
3650 3655 3660	
gga tcc tta gaa gga cac cta agg ttc ctc aaa aat atc atc cta cca	11162
Gly Ser Leu Glu Gly His Leu Arg Phe Leu Lys Asn Ile Ile Leu Pro	
3665 3670 3675	

gtc tat gac aag agc tta tgg gat ttc cta aag ctg gat gta acc acc	11210
Val Tyr Asp Lys Ser Leu Trp Asp Phe Leu Lys Leu Asp Val Thr Thr	
3680 3685 3690	
agc att ggt agg aga cag cat ctt cgt gtt tca act gcc ttt gtg tac	11258
Ser Ile Gly Arg Arg Gln His Leu Arg Val Ser Thr Ala Phe Val Tyr	
3695 3700 3705 3710	
acc aaa aac ccc aat ggc tat tca ttc tcc atc cct gta aaa gtt ttg	11306
Thr Lys Asn Pro Asn Gly Tyr Ser Phe Ser Ile Pro Val Lys Val Leu	
3715 3720 3725	
gct gat aaa ttc att act cct ggg ctg aaa cta aat gat cta aat tca	11354
Ala Asp Lys Phe Ile Thr Pro Gly Leu Lys Leu Asn Asp Leu Asn Ser	
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Val Leu Val Met Pro Thr Phe His Val Pro Phe Thr Asp Leu Gln Val	
3745 3750 3755	
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Pro Ser Cys Lys Leu Asp Phe Arg Glu Ile Gln Ile Tyr Lys Lys Leu	
3760 3765 3770	
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Arg Thr Ser Ser Phe Ala Leu Asn Leu Pro Thr Leu Pro Glu Val Lys	
3775 3780 3785 3790	
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Phe Pro Glu Val Asp Val Leu Thr Lys Tyr Ser Gln Pro Glu Asp Ser	
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Ser Gln Phe Thr Leu Pro Lys Ser Val Ser Asp Gly Ile Ala Ala Leu	
3825 3830 3835	
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Asp Leu Asn Ala Val Ala Asn Lys Ile Ala Asp Phe Glu Leu Pro Thr	
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Ile Ile Val Pro Glu Gln Thr Ile Glu Ile Pro Ser Ile Lys Phe Ser	
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Val Pro Ala Gly Ile Val Ile Pro Ser Phe Gln Ala Leu Thr Ala Arg	
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Phe Glu Val Asp Ser Pro Val Tyr Asn Ala Thr Trp Ser Ala Ser Leu	
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